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FROM:

Patrea L. Pabst	404-817-8473	12
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FOR THE RECORD:

DATE: September 25, 2003	URGENCY: <input type="checkbox"/> SUPER RUSH	<input checked="" type="checkbox"/> RUSH	<input type="checkbox"/> REGULAR
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MESSAGE:**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicants:	Peter J. Houzgo, Peter N. Morgan, Peter H. Hirst, Duncan J. Westland, and Ian R. Wilding		
Serial No.:	10/607,721	Group Art Unit:	3763
Filed:	June 27, 2003	Examiner:	Not yet assigned
For:	INGESTIBLE DEVICE		

ATL1 #587673 v1

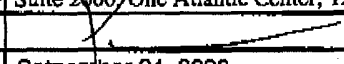
PTO/SB/21 (08-03)

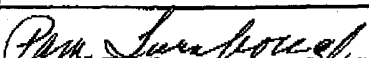
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TRANSMITTAL FORM (to be used for all correspondence after initial filing)	Application Number	10/607,721
	Filing Date	June 27, 2003
	First Named Inventor	Peter J. Houzago
	Art Unit	3763
	Examiner Name	Not yet assigned
Total Number of Pages in This Submission	//	Attorney Docket Number PHAG 100 DIV

ENCLOSURES (Check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/Incomplete Application <input checked="" type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input checked="" type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation <input type="checkbox"/> Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD. Number of CD(s) _____	<input type="checkbox"/> After Allowance communication to Group <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input type="checkbox"/> Other Enclosure(s) (please identify below):
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SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
Firm or Individual name	Patricia L. Papst, Esq., Reg. No. 31,284 Suite 2000/One Atlantic Center, 1201 West Peachtree Street, N.E., Atlanta, GA 30309-3400
Signature	
Date	September 24, 2003

CERTIFICATE OF TRANSMISSION/MAILING	
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Typed or printed name	Pam Turnbough
Signature	
Date	September 25, 2003

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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**FEE TRANSMITTAL
for FY 2003**

Effective 01/01/2003. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$) 130.00

Complete if Known

Application Number	10/607,721
Filing Date	June 27, 2003
First Named Inventor	Peter J. Houzeo
Examiner Name	Not yet assigned
Art Unit	3763
Attorney Docket No.	PHAG 100 DIV

METHOD OF PAYMENT (check all that apply)☐ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None☒ Deposit Account:Deposit Account Number
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Holland & Knight LLP

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☐ Charge any additional fee(s) during the pendency of this application
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FEE CALCULATION**1. BASIC FILING FEE**

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
1001 750	2001 375	Utility filing fee	
1002 330	2002 165	Design filing fee	
1003 520	2003 260	Plant filing fee	
1004 750	2004 375	Reissue filing fee	
1005 180	2005 90	Provisional filing fee	
SUBTOTAL (1)			(\$) .00

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

Total Claims **19** -20** = ☐ X ☐ Fee Paid ☐
 Independent Claims **1** -3** = ☐ X ☐
 Multiple Dependent ☐

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
1202 16	2202 9	Claims in excess of 20	
1201 84	2201 42	Independent claims in excess of 3	
1203 280	2203 140	Multiple dependent claim, if not paid	
1204 84	2204 42	** Reissue independent claims over original patent	
1205 18	2205 9	** Reissue claims in excess of 20 and over original patent	
SUBTOTAL (2)			(\$) .00

**or number previously paid, if greater. For Reissues, see above

FEE CALCULATION (continued)**3. ADDITIONAL FEES**

Large Entity Fee Code (\$)	Small Entity Fee Code (\$)	Fee Description	Fee Paid
1051 130	2051 65	Surcharge - late filing fee or oath	
1052 50	2052 25	Surcharge - late provisional filing fee or cover sheet	
1053 130	1053 130	Non-English specification	
1812 2,520	1812 2,520	For filing a request for ex parte reexamination	
1804 920*	1804 920*	Requesting publication of SIR prior to Examiner action	
1805 1,640*	1805 1,640*	Requesting publication of SIR after Examiner action	
1251 110	2251 55	Extension for reply within first month	
1252 410	2252 205	Extension for reply within second month	
1253 930	2253 465	Extension for reply within third month	
1254 1,450	2254 725	Extension for reply within fourth month	
1255 1,970	2255 985	Extension for reply within fifth month	
1401 320	2401 160	Notice of Appeal	
1402 320	2402 160	Filing a brief in support of an appeal	
1403 280	2403 140	Request for oral hearing	
1451 1,510	1451 1,510	Petition to institute a public use proceeding	
1452 110	2452 55	Petition to revive - unavoidable	
1453 1,300	2453 650	Petition to revive - unintentional	
1501 1,300	2501 650	Utility issue fee (or reissue)	
1502 470	2502 235	Design issue fee	
1503 630	2503 315	Plant issue fee	
1460 130	1460 130	Petitions to the Commissioner	130.00
1807 50	1807 50	Processing fee under 37 CFR 1.17(g)	
1808 180	1808 180	Submission of Information Disclosure Stmt	
8021 40	8021 40	Recording each patent assignment per property (times number of properties)	
1809 750	2809 375	Filing a submission after final rejection (37 CFR 1.129(a))	
1810 750	2810 375	For each additional invention to be examined (37 CFR 1.129(b))	
1801 750	2801 375	Request for Continued Examination (RCE)	
1802 900	1802 900	Request for expedited examination of a design application	

Other fee (specify)

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$) 130.00

SUBMITTED BYName (Print/Type) **Patricia L. Pabst**

Registration No. (Attorney/Agent)

31,284

Telephone (404) 817-8473

Signature

Date

September 24, 2003

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Peter J. Houzego, Peter N. Morgan, Peter H. Hirst, Duncan J. Westland, and Ian R. Wilding

Serial No.: 10/607,721

Group Art Unit: 3763

Filed: June 27, 2003

Examiner: Not yet assigned

For: *INGESTIBLE DEVICE*

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**RESPONSE TO NOTICE OF OMITTED ITEM(S)
IN A NONPROVISIONAL APPLICATION**

Sir:

Responsive to the Notice of Omitted Item(s) in a Nonprovisional Application, mailed September 22, 2003, applicants enclose the following for filing in the above-identified application:

1. Pages 19, 20, 34 and 35 of the Specification;
2. Transmittal Form PTO/SB/21;
3. Fee Transmittal (in duplicate); and
4. Authorization to charge Deposit Order Account No. 50-1868 in the amount of \$130.00 for filing a Petition under 37 CFR 1.182 for large entity.

PHAG 100 DIV
078230/00035

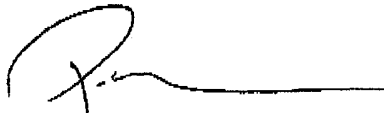
U.S.S.N: 10/607,721
Filed: June 27, 2003
Response to Notice of Omitted Item(s)
In a Nonprovisional Application

Applicants also enclose a copy of the Notice of Omitted Item(s) in a Nonprovisional Application, mailed September 22, 2003. The Commissioner is hereby authorized to charge any additional fees that may be due, or credit any overpayment in connection with this matter, to Deposit Account No. 50-1868.

The undersigned hereby certifies that the enclosed pages of the specification are true and accurate copies of the specification as originally filed in the parent application, U.S.S.N. 09/742,936, which claims priority to United Kingdom patent application No. 9930000.6 filed December 21, 1999.

Issuance of a filing receipt and forwarding of the file to the examiner is earnestly solicited.

Respectfully submitted,



Patrea L. Pabst
Reg. No. 31,284

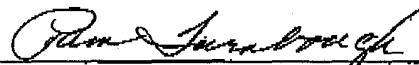
Date: September 25, 2003
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U.S.S.N: 10/607,721
Filed: June 27, 2003
Response to Notice of Omitted Item(s)
In a Nonprovisional Application

CERTIFICATE OF FACSIMILE TRANSMISSION

I hereby certify that this RESPONSE TO NOTICE OF OMITTED ITEM(S) IN A
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Alexandria, VA 22313-1450.



Pam Turnbough

Date: September 25, 2003

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mechanism; (b) a switch for switchably operating the transmitter; and (c) a switch member operatively interconnecting the actuator mechanism and the switch such that operation of the actuator mechanism causes the switch member to operate the said switch..

5 Preferred features of the sixth, seventh and eighth aspects of the invention are defined in the claims depending from Claims 39, 42, 50 and 69.

One preferred embodiment of the device includes a coil spring which operates to move a piston to expel the drug from inside the capsule through an opening at the other end of the capsule. An example of the dimensions and
10 components that could be used would be for a volume of 1ml available to contain the drug in the form of a cylinder 9mm in diameter and 16mm long. A coil spring of 8mm outer diameter compressed to a length of 4.6mm could exert an initial force of over 1kg and have a residual force of 0.2kg after it has travelled the 16mm.

15

Brief Description of the Figures

There now follows a description of preferred embodiments of the invention, by way of non-limiting example, with reference being made to the accompanying drawings in which:

20 Figure 1 is a perspective, partly sectioned view of an ingestible device according to the invention;

Figures 2a and 2b are, respectively, block diagram and schematic views of a receiver-transmitter circuit forming part of the Figure 1 device;

Figure 3 shows one embodiment of antenna for use in the Figure 1
25 device, including an antenna wire coiled about the capsule wall;

Figure 4 shows an alternative antenna, including an antenna wire coiled about a ferrite core within the device;

Figures 5a and 5b are, respectively, side elevational and plan views of an apparatus, according to the invention, for generating an oscillating, axial

magnetic field;

Figure 6 shows, schematically, a preferred embodiment of oscillating field generator;

Figure 7 shows a further embodiment of oscillating field generator
5 according to the invention;

Figures 8a and 8b are, respectively plan and cross-sectional views of a restraint and switch combination, according to the invention, before actuation of the switch;

Figures 9a and 9b are views, corresponding to the Figure 8 views, after
10 actuation of the switch;

Figures 10 to 12 show three kinds of energy source in the form of compression springs;

Figure 13 shows a restraining ring for retaining moveable components of the device of the invention within its housing, after dispensing of a substance;

Figures 14a and 14b show further springs suitable for use as the energy
15 source;

Figure 15 is a plot comparing the force applied by springs, such as those shown in Figures 14a and 14b, against a force resisting opening of the reservoir of a capsule according to the invention;

Figure 16 is a cross sectional view of one form of piston suitable for use
20 in the capsule of the invention;

Figure 17 is a similar view of another form of piston;

Figures 18 and 19 show stages in the assembly of part of a device according to the invention, including a piston such as that shown in Figures 16
25 or 17; and a lost motion arrangement for breaking the breakable link on the pcb forming part of the device;

Figures 18 and 19 show steps in the assembly of the device; and

Figures 20 and 21 show two faces of a printed circuit board, forming part of the device, in plan view.

high energy storage characteristic suitable for use in the capsule 10.

5 Each spring 50a, 50b is coated with an insulator over at least part of and preferably all its length, to insulate the springs from one another in use and thereby reduce the chance of the springs creating an electrical or magnetic closed ring ("shorted turn") capable of coupling some of the energy of the electromagnetic field intended for coupling by the receiver 59.

10 Food grade PTFE ("Teflon"TM) is the preferred coating since it is biocompatible and absorbs little of the spring energy.

15 The terminus 50c at each end of each wire defining a said spring 50a, 50b is truncated to ensure that the terminal coils of the springs also do not form any closed rings that would undesirably couple energy from the energized field. In addition each terminal portion 50c is ground or otherwise formed flat (ie. flush with the next adjacent coil) so that in use of the springs 50a, 50b within capsule 10 they push the piston 16 evenly and without buckling.

20 The springs 50a, 50b are compressible such that the compressed length of each spring is about $\frac{1}{3}$ the length of its uncompressed state, that in the preferred embodiment is about 32mm. These dimensions allow for a sufficiently high spring force to act over the entire length of movement of piston 16.

25 Figure 15 is a plot of the spring force applied by a composite spring such as shown in Figure 11 or Figures 14a and b, against its extension. Figure 15 also plots the resistive force offered by a bung such as bung 14

including a rolling O-ring seal. As is evident from Figure 15, although the spring force declines during extension of the spring, during travel of the piston the spring force always exceeds the prevailing resistive force, even when the latter rises to a maximum on opening of the reservoir 12 as noted in Figure 15.

3. Wavy Springs as shown in Figures 12a and 12b

Thin washers 55 plastically deformed in circumferential waves act as compression springs. Multiple washers 55 welded peak to peak as shown can give the required extension.

Performance can be superior to a coil spring in this application as more of the available space can be utilised. Thus, for example, a 0.25mm thick annular washer with o.d. 8.5mm and i.d. 4.5mm could be formed to have 3 circumferential waves with a peak to peak height of 2mm. Welding 16 of these together at their peaks in the manner shown forms a wavy spring with a compressed length of 4mm, an extended length of 32mm and a force profile superior to a coil spring in the available space.

Figure 12a shows such a spring in the uncompressed state; and Figure 12b shows the spring when it is compressed, prior to expulsion of the substance 12a from the reservoir 12.

Figures 16 and 17 show embodiments of the piston 16 used to expel the contents of reservoir 12 of capsule 10.

The piston 16 of Figure 16 is intended for use when the reservoir 12 is charged with a substance in liquid form.



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APPLICATION NUMBER	FILING OR 371 (c) DATE	FIRST NAMED APPLICANT	ATTORNEY DOCKET NUMBER
10/607,721	06/27/2003	Peter J. Houzego	PHAG 100 DIV

CONFIRMATION NO. 9423

23579
PATREA L. PABST
HOLLAND & KNIGHT LLP
SUITE 2000, ONE ATLANTIC CENTER
1201 WEST PEACHTREE STREET, N.E.
ATLANTA, GA 30309-3400

FORMALITIES LETTER



OC000000010905580

Date Mailed: 09/22/2003

NOTICE OF OMITTED ITEM(S) IN A NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

A filing date has been accorded to the above-identified nonprovisional application papers; however, the following item(s) appear to have been omitted from the application:

- Page(s) 19,20,34,35 of the specification (description and claims).

I. Should applicant contend that the above-noted omitted item(s) was in fact deposited in the U.S. Patent and Trademark Office (USPTO) with the nonprovisional application papers, a copy of this Notice and a petition (and \$130.00 petition fee (37 CFR 1.17(h))) with evidence of such deposit **must** be filed within **TWO MONTHS** of the date of this Notice. The petition fee will be refunded if it is determined that the item(s) was received by the USPTO.

II. Should applicant desire to supply the omitted item(s) and accept the date that such omitted item(s) was filed in the USPTO as the filing date of the above-identified application, a copy of this Notice, the omitted item(s) (with a supplemental oath or declaration in compliance with 37 CFR 1.63 and 1.64 referring to such items), and a petition under 37 CFR 1.182 (with the \$130.00 petition fee (37 CFR 1.17(h)) requesting the later filing date **must** be filed within **TWO MONTHS** of the date of this Notice.

Applicant is advised that generally the filing fee required for an application is the filing fee in effect on the filing date accorded the application and that payment of the requisite basic filing fee on a date later than the filing date of the application requires payment of a surcharge (37 CFR 1.16(e)). To avoid processing delays and payment of a surcharge, applicant should submit any balance due for the requisite filing fee based on the later filing date being requested when submitting the omitted item(s) and the petition (and petition fee) requesting the later filing date.

III. The failure to file a petition (and petition fee) under the above options (I) or (II) within **TWO MONTHS** of the date of this Notice (37 CFR 1.181(f)) will be treated as a constructive acceptance by the applicant of the application as deposited in the USPTO. **THIS TWO MONTH PERIOD IS NOT EXTENDABLE UNDER 37 CFR 1.136(a) or (b).** In the absence of a timely filed petition in reply to this Notice, the application will maintain a filing date as of the date of deposit of the application papers in the USPTO, and original application papers (i.e., the original disclosure of the invention) will include only those application papers present in the USPTO on the date of deposit.

In the event that applicant elects not to take action pursuant to options (I) or (II) above (thereby constructively electing option (III)), amendment of the specification to renumber the pages consecutively and cancel incomplete

sentences caused by any omitted page(s), and/or amendment of the specification to cancel all references to any omitted drawing(s), relabel the drawing figures to be numbered consecutively (if necessary), and correct the references in the specification to the drawing figures to correspond with any relabeled drawing figures, is required. A copy of the drawing figures showing the proposed changes in red ink should accompany with any drawing changes. Such amendment and/or correction to the drawing figures, if necessary, should be by way of preliminary amendment submitted prior to the first Office action to avoid delays in the prosecution of the application.

Replies should be mailed to: Mail Stop Missing Parts
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Alexandria VA 22313-1450

A copy of this notice MUST be returned with the reply.

S.B

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